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Nursing Students' Knowledge and Attitudes Towards Telenursing

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Abstract

Introduction. Telenursing, a subset of telehealth, is the use of information technology and telecommunications to provide remote nursing care. Telemedicine is used for the purpose of diagnosis, treatment, symptom management and monitoring of the patient's condition. Telenursing also enables counseling and patient education.

Aim. To determine the knowledge and attitudes of nursing students towards telenursing.

Methods. The cross-sectional study was conducted involving nursing students from University of Applied Health Sciences Zagreb during June 2023. A link to web-based survey was sent to students, and 140 students completed it. The survey used in the research included demographic data, data related to telemedicine and telenursing education, and 16 statements related to telenursing.

Results. Most participants didn't listen to lectures on telenursing (66.4%) or telemedicine (50.7%) during their studies. More than 89% of participants believe that education on the application of telenursing would be useful for future nursing bachelors, and more than 83% of participants believe that the knowledge of healthcare workers and patients can influence the use of telemedicine and telenursing in patient care. The majority of participants (N=91; 65%) believe that a video conference call cannot replace a live visit to a patient, but they also believe that telenursing can ensure greater availability of care for patients (N=82; 58.6%). The majority of participants (N=72; 51.5%) believe that telenursing can be applied in the care of almost all groups of patients.

Conclusions. Students have mostly positive attitudes regarding the possibility of using telenursing, but they are undecided regarding the advantages of telenursing. A lack of knowledge and wrong beliefs related to the beginning of the application of telenursing, advantages and possibilities of using telenursing in health practice were observed. Including more content related to telenursing in student education can improve students' knowledge and attitudes.

Introduction

Nurses face numerous challenges in their daily practice, some of which include the aging of the population, the increase in the number of patients with chronic diseases, the lack of nurses, changes related to technological development, digitalization and ways of providing healthcare. Telehealth, telemedicine and telenursing have been used for decades in the provision of healthcare in order to ensure accessible, safe and quality care. With the advent of the COVID-19 pandemic, there has been a significant increase in the use of telemedicine and telenursing services, as well as a change in attitudes towards telemedicine and telenursing.

Telemedicine is defined as the delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuous education of healthcare providers, all in the interests of advancing the health of individuals and their communities (1). Telenursing, a subset of telehealth, is the use of information technology and telecommunications to provide remote nursing care. The American Nurses Association has defined telenursing as the use of "technology to deliver nursing care and conduct nursing practices" (2). Telemedicine is used for the purpose of diagnosis, treatment, symptom management and monitoring of the patient's condition (3, 4). Telenursing also enables counseling and patient education.

The first documented evidence of telenursing occurred in 1974, when Mary Quinn, RN, an employee of Boston Hospital's telemedicine center, provided remote nursing care to patients who were at Logan Airport (5). The beginnings of telemedicine in Croatia were connected with the transmission of ECG signals over telephone lines in the 1970s and 1980s. The application was limited due to the development of the telecommunications infrastructure, the procurement of equipment and the development of the Internet (6). With the development of technology, the availability of computers, tablets, smartphones and the development of the Internet, as well as the education of healthcare workers, the possibilities of using telemedicine and telenursing have changed significantly. According to the International Telecommunication Union Statistics, 66% of the world's population is using the Internet in 2022 (7).

Healthcare professionals provide several types of telehealth services: live video conferencing, asynchronous or store-and-forward technology, remote patient monitoring, and mHealth. When applying telenursing, a nurse can use various communication technologies, including telephone, fax, computer, tablet or other form of modern technology which enables capturing, storing, analyzing and dissemination data such as text, photos and videos using telecommunication (8, 9). Nurses can use applications such as WhatsApp, Facetime, SMS, e-mail, smartphone applications, etc. (3). The patient's condition can be monitored using applications installed on the patient's smartphone; the applications can also be used for the purpose of educating patients and family members.

Telenursing is being considered as an approach to meeting the needs for patient care. In telenursing, the nurse must follow the nursing process when assessing, planning, implementing, and evaluating care. The only difference is that the care is provided remotely, rather than in person.

Although telemedicine and telenursing have been applied for a number of years, especially for the purpose of providing care to patients living in rural areas and remote locations and for the purpose of monitoring the patient's condition, a significant increase in telemedicine and telenursing services occurred with the COVID-19 pandemic. The nurses who had not participated in telenursing interventions until then, as well as the patients who indicated that they were encountering telemedicine and telenursing interventions for the first time, were involved in the provision of services. In the United States, before the pandemic, 66% of patients indicated they would use

telemedicine services, and only 8% did. During the pandemic, there was a 638% increase in the use of telemedicine services in New York in 2020 (10), in a study by Cruoch and colleagues, 73% of participants stated that the COVID-19 pandemic made them more open to using telehealth (11).

Telemedicine services enable better access to health and nursing care, ensure continuity of care, save time and expenses, provide greater self-care possibilities, increase the participation of patients and, in the time of pandemic, reduced the risk of transition of infection (4, 12-17). Telenursing/telehealth with telemonitoring is effective in decreasing the number of outpatient and emergency room visits, shortening hospital stays, improving health-related quality of life, and decreasing the cost of healthcare (18).

The effectiveness of telenursing services was achieved when providing care for chronically ill patients (17), oncology patients (18, 19), patients undergoing surgery (12) in home care (3), palliative care (20) and in many other cases. When caring for the elderly or people suffering from multiple chronic diseases, the support provided through telenursing enables patients to receive service in their own home without organizing a travel to a healthcare facility, which can be demanding and expensive.

Telemedicine interventions cannot always be applied. They are not suitable when a physical examination is required, when a diagnosis has not been established, and when the patient wants to visit in-a-person (14, 16). Also, telemedicine is not recommended for initial consult because it is hard to build a relationship between a physician or nurse and the patient. Technological difficulties such as the unavailability of technology which enables video calls, poor Internet coverage, lack of knowledge and resistance to technology can be a barrier to providing telenursing interventions. When it comes to healthcare workers, the main obstacle to the provision of telenursing interventions is the lack of knowledge and skills (13).

To provide telemedicine and telenursing interventions, health professionals need specific knowledge related to the use of technology, the implementation of telenursing visits, and the protection of patient privacy. Telenursing education has a significant impact on their knowledge, attitudes and awareness of future work (21, 22).

During their studies, students listen to classes related to information technology in nursing and the organization of providing health and nursing care, but it is not known what knowledge and attitudes the students have adopted.

According to our knowledge and the available published papers, knowledge and attitudes of nursing students in the Republic of Croatia towards telenursing have not been examined so far, therefore, the aim of our research was to determine knowledge and attitudes of nursing students towards telenursing.

Methods

Study design and participants

A cross-sectional study was conducted involving full-time nursing students from University of Applied Health Sciences Zagreb during June 2023. A link to web-based survey (Google Forms) was sent to students by e-mail with a request to fill out the survey. The survey was addressed to 321 students of the first, second and third year of nursing studies, and 140 students (43.61%) completed it.

Participation in the survey was voluntary, and filling out the survey implied consent to participate in the survey. The students were sent a reminder to complete the survey, and the students who didn't want to, didn't have to complete the survey. It took 5 minutes to complete the survey.

Instrument

For the purposes of the research, a survey was created. It included demographic data (age, gender, year of study), data related to telemedicine and telenursing education, and 16 statements related to telenursing. The statements were prepared on the basis of the literature related to telenursing and a survey which was previously used to assess the attitudes of nursing students and nurses towards telenursing (22).

When it comes to statements about telenursing, the participants indicated on a Likert-type scale from 1 to 5 the extent to which they agree with a particular statement, where 1 indicates "strongly disagree" and 5 "strongly agree".

Ethics

The ethics committee of the educational institution approved the implementation of the research (Adm No:602-03/23-18/390; Ref. No:251-379-10-23-02). The students were informed of the purpose of the research, filling out the survey implied the consent to participate in the research. The principles of the Declaration of Helsinki were applied in conducting the research.

Statistics

The data were entered in an Excel spreadsheet and analyzed in SPSS 20.0 software (IBM Corp., NY, USA) for statistical analysis. The normality of the distribution of all variables was tested using the Kolmogorov-Smirnov test for normality. It was found that all variables significantly deviate from normal distribution. Descriptive statistics, Mann-Whitney U test and Kruskal-Wallis test were used to analyze the data, and $p<0.05$ was considered significant.

Results

A total of 140 full-time nursing students participated in the research. Most of the participants were second year students 40.7% (N=57) and most of them were women 90% (N=126). The age ranged from 29 to 46 years, and the average age was M= 22.4 (SD=3.97).

Table 1. **Demographic characteristics**

		N	%
Study year	1st year	50	35.7
	2nd year	57	40.7
	3rd year	33	23.6
	Total	140	100
Gender	Female	126	90
	Male	14	10
	Total	140	100
Age	19-25	132	94.3
	26-40	6	4.3
	41-46	2	1.4
	Total	140	100

Most participants stated that they did not listen to lectures on telenursing (66.4%) or telemedicine (50.7%) during their studies.

Table 2. **Students' response related to lectures on telenursing and telemedicine**

		N	%
Did you listen to telenursing lectures during your studies?	Yes	47	33.6
	No	93	66.4
	Total	140	100
Did you listen to telemedicine lectures during your studies?	Yes	69	49.3
	No	71	50.7
	Total	140	100

More than 89% of participants (N=111) believe that education on the application of telenursing would be useful for future nursing bachelors, and more than 83% of participants believe that the knowledge of healthcare workers and patients can influence the use of telemedicine and telenursing in patient care. Furthermore, more than three quarters of participants (N=107, 76.4%) believe that family members can help when using telemedicine services.

Only 7.8% of participants (N=11) do not agree that the beginning of telenursing is related to the pandemic of the disease COVID-19, while the majority of participants agree with that statement (N=69, 49.3%), and a large part of participants are undecided (N=60, 42.9%).

The majority of participants (N=91, 65%) believe that a video conference call cannot replace a live visit to a patient, but they also believe that telenursing can ensure greater availability of care for patients (N=82, 58.6%). The majority of participants are undecided regarding the claims that telenursing could reduce the connection between nurses and patients (N=63, 45%), increase the costs of care (N=75, 51.4%), increase the efficiency of clinical staff (N=71, 50.7%) and facilitate direct contact of clinical staff with patients (N=60, 42.9%).

The majority of participants (N=72; 51.5%) believe that telenursing can be applied in the care of almost all groups of patients, as well as in nursing care in the community (N=88, 62.9%), in patients with diabetes (N=97, 69.3%), during long-term care for patients (N=79, 56.4%), but only 44.2% of participants

Table 3. **Descriptive statistics of students' responses related to lectures on telenursing and telemedicine**

		N	%	x̄	Md	Mo	Sd
Education on the application of telenursing in patient care would be useful for nurses.	Strongly disagree	7	5	4.20	5	5	1.08
	Disagree	3	2.1				
	Neither agree nor disagree	19	13.6				
	Agree	37	26.4				
	Strongly agree	74	52.9				
	Total	140	100				
Telenursing can be applied in the care of almost all groups of patients.	Strongly disagree	7	5	3.57	4	3	1.07
	Disagree	10	7.1				
	Neither agree nor disagree	51	36.4				
	Agree	40	28.6				
	Strongly agree	32	22.9				
	Total	140	100				
The knowledge of healthcare workers and patients can influence the application of telemedicine and telenursing in patient care.	Strongly disagree	5	3.6	4.25	4	5	0.93
	Disagree	0	0				
	Neither agree nor disagree	18	12.9				
	Agree	49	35				
	Strongly agree	68	48.6				
	Total	140	100				
Family members can help when using telemedicine services.	Strongly disagree	5	3.6	4.11	4	5	0.98
	Disagree	1	0.7				
	Neither agree nor disagree	27	19.3				
	Agree	48	34.3				
	Strongly agree	59	42.1				
	Total	140	100				
Telenursing could decrease the connection between nurses and patients.	Strongly disagree	10	7.1	3.20	3	3	1.08
	Disagree	20	14.3				
	Neither agree nor disagree	63	45				
	Agree	26	18.6				
	Strongly agree	21	15				
	Total	140	100				
Telenursing can increase the cost of patient care.	Strongly disagree	12	8.6	2.86	3	3	0.97
	Disagree	31	22.2				
	Neither agree nor disagree	72	51.4				
	Agree	15	10.7				
	Strongly agree	10	7.1				
	Total	140	100				
The beginning of the application of telenursing is related to the pandemic of the COVID-19 disease.	Strongly disagree	3	2.1	3.58	3	3	0.93
	Disagree	8	5.7				
	Neither agree nor disagree	60	42.9				
	Agree	43	30.7				
	Strongly agree	26	18.6				
	Total	140	100				

Table 3. **Descriptive statistics of students' responses related to lectures on telenursing and telemedicine**

		N	%	x̄	Md	Mo	Sd
A video conference call can replace a "live" visit to the patient.	Strongly disagree	59	42.1	2.11	2	1	1.18
	Disagree	32	22.9				
	Neither agree nor disagree	31	22.1				
	Agree	11	7.9				
	Strongly agree	7	5				
	Total	140	100				
Telenursing can increase efficiency of clinical staff.	Strongly disagree	6	4.3	3.33	3	3	1.13
	Disagree	10	7.1				
	Neither agree nor disagree	71	50.8				
	Agree	38	27.1				
	Strongly agree	15	10.7				
	Total	140	100				
Telenursing can ensure greater availability of patient care.	Strongly disagree	6	4.3	3.74	4	3	0.99
	Disagree	2	1.4				
	Neither agree nor disagree	50	35.7				
	Agree	46	32.9				
	Strongly agree	36	25.7				
	Total	140	100				
Telenursing can facilitate direct contact between clinical staff and patients.	Strongly disagree	7	5	3.34	3	3	1.03
	Disagree	16	11.4				
	Neither agree nor disagree	60	42.9				
	Agree	36	25.7				
	Strongly agree	21	15				
	Total	140	100				
Telenursing can be used in community nursing.	Strongly disagree	3	2.1	3.81	4	4	1.01
	Disagree	10	7.1				
	Neither agree nor disagree	39	27.9				
	Agree	47	33.6				
	Strongly agree	41	29.3				
	Total	140	100				
Telenursing can be used in nursing care for diabetic patients.	Strongly disagree	4	2.9	3.99	4	5	0.99
	Disagree	3	2.1				
	Neither agree nor disagree	36	25.7				
	Agree	44	31.4				
	Strongly agree	53	37.9				
	Total	140	100				
Telenursing can be used in oncology nursing.	Strongly disagree	9	6.4	3.41	3	3	1.15
	Disagree	18	12.9				
	Neither agree nor disagree	51	36.5				
	Agree	31	22.1				
	Strongly agree	31	22.1				
	Total	140	100				

Table 3. **Descriptive statistics of students' responses related to lectures on telenursing and telemedicine**

		N	%	x̄	Md	Mo	Sd
Telenursing can be used in long-term nursing care.	Strongly disagree	8	5.7	3.66	4	3	1.14
	Disagree	11	7.9				
	Neither agree nor disagree	42	30				
	Agree	38	27.1				
	Strongly agree	41	29.3				
	Total	140	100				
Mobile applications (mHealth) are used in the monitoring of chronically ill patients.	Strongly disagree	4	2.9	3.43	3	3	0.89
	Disagree	4	2.9				
	Neither agree nor disagree	82	58.5				
	Agree	28	20				
	Strongly agree	22	15.7				
	Total	140	100				

Legend: x̄- mean; Md – median, Mo – mod; Sd – standard deviation

(N=61) agree with the statement that telenursing can be used in the care of oncology patients. The majority of participants (58.6%, N=82) are undecided regarding the statement that mobile applications are used in the monitoring of chronically ill patients, while only a third of participants agree with this statement (N=50, 35.7%).

The highest level of agreement among participants was documented on the statements "The knowledge of healthcare workers and patients can influence the application of telemedicine and telenursing in patient care" (M=4.25; SD=0.93) and "Education on the application of telenursing in patient care would be useful for nurses" (M=4.20; SD=1.08), while the lowest degree of agreement was documented on the statement "A video conference call can replace a 'live' visit to the patient" (M=2 .11; SD=1.18) and "Telenursing can increase the cost of patient care" (M=2.86; SD=0.97).

The students who listen about telemedicine in lectures have a statistically significantly higher level of agreement with the statements "The knowledge of healthcare workers and patients can influence the application of telemedicine and telenursing in patient care" (M-W=1928.0; $p<0.05$), "Family members can help when using telemedicine services" (M-W=1928.0; $p<0.05$), "Telenursing can decrease the connection between nurses and patients" (M-W=1834.5; $p<0.05$), "The beginning of the application of telenursing is related to the pandemic of the COVID-19 disease" (M-W=1974.0; $p<0.05$), and "Telenursing can ensure greater availability of patient care" (M-W=1886.5; $p<0.05$) (Table 4).

Students who listened about telenursing in lectures have a statistically significantly higher level of agreement with the statements "Family members can help when using telemedicine services" (M-W=1722.5; $p<0.05$), "A video conference call can replace a live visit to the patient" (M-W=1755.5; $p<0.05$), "Telenursing can be used in oncology nursing" (M-W=1721.0; $p<0.05$), and "Telenursing can ensure greater availability of patient care" (M-W=1584.5; $p<0.05$) (Table 5).

Considering the year of study, there is a statistically significant difference in the level of agreement with the statement "Telenursing can be applied in the care of almost all groups of patients" (K-W=9.095; $p<0.05$), with the highest level of agreement expressed by students of the second year of nursing studies. To determine the statistically significant difference in the mentioned variable between years of nursing studies, we conducted three Mann-Whitney U tests. The results indicated a statistically significant difference between the 1st and 2nd study years (M-W=1825,0; $p<0.05$), as well as between the 1st and 3rd years (M-W=660.5; $p<0.05$). We also found statistically significant difference in the statement "The beginning of the application of telenursing is

Table 4. **The results of Mann-Whitney U test of differences on items, where statistically significant difference was observed considering whether students listen about telemedicine in lectures**

Variable	Did you listen to telemedicine lectures during your studies?	N	Mean Ranks	Mann-Whitney U	*p*
The knowledge of healthcare workers and patients can influence the application of telemedicine and telenursing in patient care.	Yes	69	79.06	1928.0	0.018
	No	71	63.15		
Family members can help when using telemedicine services.	Yes	69	78.17	1920.5	0.019
	No	71	63.05		
Telenursing can decrease the connection between nurses and patients.	Yes	69	79.41	1834.5	0.007
	No	71	61.84		
The beginning of the application of telenursing is related to the pandemic of the COVID-19 disease.	Yes	69	77.39	1974.0	0.035
	No	71	63.80		
Telenursing can ensure greater availability of patient care.	Yes	69	78.66	1886.5	0.013
	No	71	62.57		

p<0.05

Table 5. **The results of Mann-Whitney U test of differences on items where statistically significant difference was observed considering whether the student listen about telenursing in lectures**

Variable	Did you listen to telenursing lectures during your studies?	N	Mean Ranks	Mann-Whitney U	*p*
Family members can help when using telemedicine services.	Yes	47	80.35	1722.5	0.029
	No	93	65.52		
A video conference call can replace a "live" visit to the patient.	Yes	47	79.65	1755.5	0.046
	No	93	65.88		
Telenursing can ensure greater availability of patient care.	Yes	47	83.29	1584.5	0.005
	No	93	64.04		
	No	93	67.17		
Telenursing can be used in oncology nursing.	Yes	47	80.38	1721.0	0.033
	No	93	65.51		

p<0.05

Table 6. **The results of Kruskal-Wallis test of differences on items where statistically significant difference was observed regarding the year of study**

Variable	Study year	N	Mean Ranks	Kruskal-Wallis test	*p*
Telenursing can be applied in the care of almost all groups of patients.	1.	50	62.71	9.095	0.011
	2.	57	82.43		
	3.	33	61.70		
The beginning of the application of telenursing is related to the pandemic of the disease COVID-19.	1.	50	80.01	6.510	0.039
	2.	57	61.25		
	3.	33	72.08		

p<0.05

related to the pandemic of the COVID-19 disease" (K-W=6.510; $p<0.05$), where the highest level of agreement was expressed by students of the first year of nursing studies (Table 6). To determine between which years of study there is the statistically significant difference, we also conducted three Mann-Whitney U tests. The results indicated a statistically significant difference between the 1st and 2nd study years (M-W=1045,0; $p<0.05$)

Discussion

The aim of the research was to determine knowledge and attitudes of nursing students towards telenursing. Students have mostly positive attitudes regarding the possibility of using telenursing, but they are undecided regarding the advantages of telenursing. A lack of knowledge and wrong beliefs related to the beginning of the application of telenursing, advantages and possibilities of using telenursing in healthcare were observed.

Telenursing has been used in the provision of nursing care for more than 40 years, and the increase in use was stimulated by the pandemic of the COVID-19 disease. The majority of students state that they have not listened to lectures on telemedicine and telenursing. Furthermore, the majority believe that education on the application of telenursing would be useful and that the knowledge of healthcare workers affects the application of telenursing and telemedicine in patient care. In the research by Poredda et al. (21) and Glinkowski et al. (22), the participants stated that they believe that education of nursing students about telenursing during undergraduate studies is necessary.

The education of healthcare workers should be planned in order to possess the necessary knowledge and skills to provide safe, effective, and personalized care. The required competencies regarding telenursing can be classified into eight major categories: clinical knowledge, critical thinking skills, technological skills, clinical skills, communication skills, implementation skills, professionalism and professional ethics, and evidence-based practice (23).

The majority of participants state that the use of telenursing is related to the emergence of the COVID-19 pandemic. During their studies, students listen to lectures on telemedicine and the use of certain monitoring systems and applications, but considering the students' answers, it is necessary to expand the content and introduce students to telemedicine, telenursing and applications used for remote monitoring of patients' conditions.

The majority of participants are undecided regarding the statements that telenursing could increase the efficiency of clinical staff and facilitate direct contact of clinical staff with patients, whereby our results differ from the results of the research of Glikowski et al. (22). In the research of Glikowski and colleagues, 90% of participants presented opinion that telenursing could increase the efficiency of clinical staff (22). Also, the majority of participants believe that a video conference call cannot replace a live visit to a patient, which is not true, because video conference calls are used for the purpose of permanent monitoring of the patient's condition, control checkups, and in that way they can replace the visit of a healthcare worker to the patient, i.e. the patient does not need to go to a health institution for checkup (14, 16).

The majority of participants believe that telenursing can be applied in the care of almost all groups of participants, and in nursing care in the community, for those suffering from diabetes, during long-term care for patients. The majority of participants in previously conducted research also believe that telenursing can be applied to all groups of patients (15, 21).

Less than one half of the participants agree with the statement that telenursing can be applied in the care of oncology patients, but students who stated that they listened about telenursing in lectures have a statistically significantly higher level of agreement with the statement that telenursing can be applied to oncology patients, which is today a common practice (18, 19).

Despite the fact that a number of mobile applications are used to monitor patients suffering from chronic diseases, especially those suffering from diabetes, the majority of participants are undecided about the statement that mobile applications are used to monitor chronically ill patients, while only a third of participants agree with this statement.

The students from all three years of nursing studies participated in our research, and the research was

conducted at the end of the academic year, so that students of the first year of study also attended lectures on information technology in nursing and they also listened lectures on nursing care and attended clinical practice. Considering the year of study, a statistically significant difference was observed in the level of agreement with the statement "Telenursing can be applied in the care of almost all groups of patients", where the highest level of agreement was expressed by students of the second year of nursing studies, and with the statement "The beginning of the application of telenursing is related to the pandemic of the COVID-19 disease", where the highest level of agreement was expressed by students of the first year of nursing studies, but unfortunately this is not correct. The COVID-19 pandemic has significantly increased the use of information and communication technology in all activities of human functioning, especially in education and medicine. Due to the significant increase in use, students may have the impression that due to specific circumstances, the application of telemedicine and telenursing began then.

The students who heard about telenursing in lectures have a statistically significantly higher level of agreement with the statements "Family members can help when using telemedicine services", "A video conference call can replace a 'live' visit to the patient", "Telenursing can be used in oncology nursing" and "Telenursing can ensure greater availability of patient care", which indicates more positive attitudes towards telenursing. We can assume that more positive attitudes are related to previous education and that with targeted education, students would acquire the necessary knowledge and skills, and have more positive attitudes towards telenursing.

The application of telenursing among working nurses is influenced by numerous factors such as previous experiences, the use of similar technology and social networks, digital education, and computer self-efficacy (8, 13). The students are aware of the need to acquire knowledge about telenursing, and 79.3% of them state that the education would be useful for nurses. The content related to telenursing should be included to a greater extent in the education of nursing students, both in the course related to information technology in nursing care and in other courses in the field of nursing care and healthcare organization. When presenting the content, it is necessary to additionally emphasize the possibilities of applied technology and connect the application of technology with telemedicine. Also, in practical classes, the student should be introduced to and involved in the application of telenursing interventions.

Limitations

A cross-sectional study was conducted to determine the results of the participants at the time of the research. The research was conducted at one university, and therefore it is not possible to generalize the results of the research to all nursing students, but the obtained results can be used for comparation with the results of future research. Although a convenience sample was used, the value of the research is the participation of students of all 3 study years in the research.

Conclusion

The students have mostly positive attitudes regarding the possibility of using telenursing, but they are undecided regarding the advantages of telenursing. A lack of knowledge and wrong beliefs related to the beginning of the application of telenursing, advantages and possibilities of using telenursing in health practice were observed.

It is necessary to incorporate content related to telemedicine and telenursing into the study program so that students are prepared to provide telemedicine/telenursing services. Education and insight into application possibilities can contribute to more positive attitudes towards telenursing.

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ZNANJA I STAVOVI STUDENATA SESTRINSTVA O TELESESTRINSTVU

Sažetak

Uvod. Telesestrinstvo, podskup telemedicine, jest korištenje informacijskom tehnologijom i telekomunikacijama za pružanje sestrinske skrbi na daljinu. Telemedicina se primjenjuje u svrhu dijagnostike, liječenja, upravljanja simptomima i praćenja stanja pacijenta, telesestrinstvo također omogućuje savjetovanje i edukaciju pacijenata.

Cilj. Utvrditi znanje i stavove studenata sestrinstva o telesestrinstvu.

Metode. Presječno istraživanje provedeno je na studentima sestrinstva Zdravstvenog veleučilišta u Zagrebu tijekom lipnja 2023. Studentima je poslana poveznica na web-upitnik te ga je ispunilo 140 studenata. Upitnik koji je upotrijebljen u istraživanju uključivao je demografske podatke, podatke povezane s predavanjima o telemedicini i telesestrinstvu te 16 tvrdnji povezanih s telesestrinstvom.

Rezultati. Većina sudionika tijekom studija nije slušala predavanja o telesestrinstvu (66,4 %) ili telemedicini (50,7 %). Više od 89 % sudionika smatra da bi edukacija o primjeni telesestrinstva bila korisna budućim prvostupnicima sestrinstva, a više od 83 % sudionika smatra da znanje zdravstvenih djelatnika i pacijenata može utjecati na primjenu telemedicine i telesestrinstva u skrbi za pacijente. Većina sudionika (N=91; 65 %) smatra da videokonferencijski poziv ne može zamijeniti posjet pacijentu uživo, ali također vjeruju da telesestrinstvo može osigurati veću dostupnost skrbi za pacijente (N=82; 58,6 %). Većina sudionika (N=72; 51,5 %) smatra da se telesestrinstvo može primijeniti u skrbi za gotovo sve skupine pacijenata.

Zaključci. Studenti imaju uglavnom pozitivne stavove o mogućnosti primjene telesestrinstva, ali su neodlučni kad je riječ o prednostima telesestrinstva. Uočen je nedostatak znanja i pogrešna uvjerenja povezana s početkom primjene telesestrinstva te prednostima i mogućnostima primjene telesestrinstva u zdravstvenoj praksi. Uključivanje više sadržaja povezanih s telesestrinstvom u edukaciju studenata može unaprijediti znanja i stavove studenata.

Ključne riječi: telesestrinstvo, stavovi, studenti